

## PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

EVALUATION & COMPLIANCE DIVISION  
Energy BranchRESOLUTION E-2083  
April 16, 1986RESOLUTIONORDER AUTHORIZING PACIFIC GAS AND ELECTRIC COMPANY (PG&E)  
TO CONTINUE IMPLEMENTATION OF A RATE SCHEDULE FOR EXPERI-  
MENTAL ELECTRIC SERVICE. SCHEDULE A-RTP, REAL-TIME  
PRICING SERVICE.

By Advice Letter No. 1111-E filed March 31, 1986, PG&E has requested authorization to extend and modify Schedule A-RTP, Real-Time Pricing Service, and its accompanying electric service agreement, Electric Service Agreement - Experimental Real-Time Pricing Service (Form 79-704), as set forth on Cal. P.U.C. Sheets Nos. 9473-E through 9476-E, inclusive. The facts are as follows:

1. By Decision No. 83-12-068, dated December 22, 1983, in Application No. 82-12-048, the Commission authorized PG&E to conduct an experiment in real-time pricing (RTP) applicable to large commercial and industrial users. Under this experimental program, participants will be given a daily price schedule by hour of energy usage with one-day notice in advance. The Commission adopted funding of \$419,000 in 1984, adjusted for escalation. On May 1, 1985, the Commission approved PG&E's first year RTP case study implementation by Resolution E-2039; said resolution calls for the tariff to expire March 31, 1986. On March 19, 1986, by Resolution E-2075 the Commission approved an extension of the tariff schedule through May 31, 1986 pending approval of this resolution to continue the refined RTP experiment.

2. Real-Time Pricing is the practice of continually updating prices to reflect changes in the cost of producing and delivering electricity; i.e., it is based on marginal costs of electricity. Ideally, RTP can be viewed as a refinement of time-of-use rates. The proposed new schedule offers customers who can adjust their patterns of use the opportunity to lower their bills. Additionally, it makes possible better use of utility capacity.

3. Rates paid by participating customers will be subject to hourly changes. Customers will be notified on a daily basis,

through equipment supplied by PG&E, of the prices that will be in effect each hour of the following day. Prices will be determined by means of a real-time pricing algorithm.

4. The rate is designed to collect the same revenue requirement with the RTP's as would have been collected with the A-22 Tariff Schedule if there is no shift in the customer's load (revenue neutrality). The algorithm will produce an RTP each hour which is the sum of the: 1) base energy rate to recover Annual Energy Rate (AER), Conservation Financing Adjustment (CFA), Solar Financing Adjustment (SFA), Residential Conservation Services Adjustment (RCS), Steel Surcharge Adjustment (SSA), and CPUC Reimbursement Fee; and 2) spot energy rate. The spot energy rate is composed of the: 1) hourly marginal energy cost; 2) marginal shortage cost (based on current as-delivered capacity payments to qualifying facilities), including a variable shortage cost subcomponent (see Paragraph 5 for discussion); and 3) a multiplier applied to the on- and partial-peak hours to reconcile revenue collections with the A-22 rate. The RTP algorithm meets the goals of representing marginal costs, recovery of base charges, and maintaining revenue neutrality. The multiplier will also be adjusted to maintain revenue neutrality after any offset adjustment (ECAC or GAC) that changes either the A-RTP or A-22 rate by 10% or more. The multiplier adjustment will be provided to the Commission Staff within ten days of such rate changes and will not become effective until filed with the Commission.

Comparison of Typical Rates (\$ per kWh)  
Period A Summer Month, August

|              |           | <u>A-22 Rate</u> | <u>Real-Time Pricing Rate*</u> |
|--------------|-----------|------------------|--------------------------------|
| On Peak      | 3:00 p.m. | .11288           | .22500                         |
| Partial Peak | 9:00 p.m. | .09255           | .12000                         |
| Off Peak     | 2:00 a.m. | .06423           | .04000                         |

Period B Winter Month, January

|              |           | <u>A-22 Rate</u> | <u>Real-Time Pricing Rate*</u> |
|--------------|-----------|------------------|--------------------------------|
| On Peak      | 3:00 p.m. | .10810           | .10500                         |
| Partial Peak | 9:00 p.m. | .08316           | .10000                         |
| Off Peak     | 2:00 a.m. | .06950           | .04000                         |

\* Approximate values from estimates provided by PG&E.

5. A three-tier load management price signal is proposed as a part of the marginal shortage cost component of the Real-Time Pricing hourly pricing algorithm. Its inclusion will allow

testing of RTP's ability to act as an inducement to reduce load during specific times of the day. The LM price signal or subcomponent, a dispatchable variable shortage cost, refines and extends the existing fixed marginal shortage cost. The highest tier of this three-increment cost (i.e., \$.0375/kWh) is pegged to the full annualized cost of building a peaking unit combustion turbine (that is, the full gas turbine proxy). The LM subcomponent will be invoked only on those days when spinning reserves are expected to fall below 7.5%.

The subcomponent's incremental level will reflect the percent of spinning reserve margin that is forecast for the day's system peak. The incremental amount will be incorporated into the hourly price across the entire on-peak period. The utilization of the LM subcomponent will be tied to the forecast spinning reserve margin established on any given day. The price signals transmitted on the previous day will be updated to reflect the appropriate increment at least one hour prior to the applicable time frame. The intended purpose of these updates is to invoke the LM subcomponent based on the day's forecasted spinning reserves at peak. However, PG&E may also update other components of the pricing algorithm when system conditions warrant. The total number of updates is limited to 10 per year.

Price Signal Increment vs. % Spinning Reserve

|                      |             |
|----------------------|-------------|
| Tier 1 - \$.0125/kWh | 7.4% - 7.0% |
| Tier 2 - \$.0025/kWh | 6.9% - 6.0% |
| Tier 3 - \$.0375/kWh | 5.9% - 0%   |

6. The proposed rate schedule, as well as the overall design of the experiment, reflects the Commission Staff's interest and input. PG&E has worked with the staff in developing the scope and direction of the project.

7. PG&E plans to recruit three additional participants for the 1986-1987 experiment from among customers in its Golden Gate, Redwood, and Mission Trail Regions currently being served on Electric Schedule No. A-22, Time-Metered General Service. The recruits will bring the total participant base to seven, as called for in PG&E's "Demand-Side Real-Time Pricing Project Plan 1985-1987."

8. PG&E wishes to begin serving customers under the new schedule commencing on or after April 16, 1986.

9. PG&E and staff believe that the tariff should be approved to be effective through March 31, 1987. Staff is enthusiastic about the insights to be gained from the RTP experiment.

Many aspects of RTP, such as the pricing algorithm, communication systems, etc., will be evolving and improving over the life of the experiment and beyond. In order to maximize the quality of insights gained and incorporate the valuable experience into the remainder of the experiment, PG&E and staff will evaluate progress annually according to the schedule below. On the basis of the quality of the data and analysis provided by PG&E, an improved tariff will be considered prior to the expiration of the 1986-87 tariff.

A) Staff of the Public Staff Division will provide PG&E with a written outline detailing the content and format of the Annual RTP Report. PG&E will submit 10 copies of a Draft of the Annual RTP Report to the assigned RTP Project Manager of the Public Staff Division on or before December 1, 1986. Upon receipt of PG&E's Draft Annual RTP Report, Staff will determine whether its contents meet the desired standards of completeness and thoroughness. Within two weeks after the receipt of the Draft Report, Staff will advise PG&E of any aspects of the report deemed unacceptable.

B) By February 1, 1987, PG&E will submit the Final RTP Report.

Due to the lack of completeness and thoroughness of the 1985-86 Annual RTP Report, Staff will request by letter additional information from PG&E. The decision of whether or not to approve a new tariff in March, 1987 will be based upon this additional information from 1985-86, as well as on the 1986-87 Annual RTP Report.

C) Based upon the results of the Final Annual RTP Report, PG&E will propose adjustment and/or refinement of the Pricing Algorithm, especially the Marginal Shortage Cost Component. PG&E will submit a new pricing algorithm within two weeks of the submittal of the Final Report.

The purpose of the above schedule of requirements is to ensure that the experiment is as productive as possible and that the tariff is renewed on a timely basis.

10. Copies of this advice letter have been mailed to all interested parties whose names appear on the attached service list to the advice letter. The Commission has received no protests in this matter.

11. This filing has been reviewed by the Energy Branch of the Evaluation and Compliance Division and approval is recommended.

12. We find that this advice letter is just and reasonable and will not increase any rate or charge, cause the withdrawal of service, nor conflict with any other schedules.

**THEREFORE:**

1. Pacific Gas and Electric Company is authorized by Sections 454 and 490 of the Public Utilities Code and by Section X.A. of General Order 96-A to place the above Advice Letter No. 1111-E into effect today subject to the following modifications:

a. PG&E shall fully comply with the terms and conditions set forth in Paragraphs 4 and 9 above.

b. The initial term of the Electric Service Agreement for Experimental Real-Time Pricing Service (Form 79-704) shall be limited to one year.

2. Advice Letter 1111-E and accompanying tariff sheets as ordered modified shall be marked to show that they were authorized for filing by Commission Resolution E-2083. This Resolution is effective today.

3. The modified tariff sheets and form shall be filed within five days of the effective date of this Resolution.

I certify that this Resolution was adopted by the Public Utilities Commission at its regular meeting on April 16, 1986. The following Commissioners approved it:

  
Executive Director

DONALD VIAL  
President  
VICTOR CALVO  
PRISCILLA C. GREW  
FREDERICK R. DUDA  
Commissioners